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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,504	11/12/2003	Patrick D. McCusker	03CR163/KE	7221

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EXAMINER	
WANG, CLAIRE X	
ART UNIT	**PAPER NUMBER**
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

Office Action Summary	Application No.	Applicant(s)	
	10/706,504	MCCUSKER, PATRICK D.	
	Examiner	**Art Unit**	
	Claire Wang	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claim 9 recites the limitation "the active remote sensing technology" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. To over come the rejection, examiner suggests changing the phrase “claim 1” of line 1 to “claim 8.” In order to further prosecution, examiner will read claim 9 to be dependent from claim 8.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Poehler et al. (US 6,011,505) (here forward Poehler) in view of Place et al. (US 6,125,329) (here forward Place).

As to claim 1, Poehler teaches a method of identifying errors in information describing terrain features (extraction of elevation data to produce a precise elevation map data; Col. 1, lines 15-20), comprising: obtaining a second set of data describing the area of terrain (radar data for a given patch of the Earth's surface is collected; Col. 6, lines 18-19), the second set of data having a second type of error (phase error, elevation error; Fig. 2, steps S2 and S3), wherein the second type of error is characteristically different from the first type of error (since the first set of data is obtained using a different system, it is clear that the errors would be different as well); comparing a subset of the first set of data corresponding to a first portion of the area of terrain with a subset of the second set of data corresponding to the first portion to identify information not present in one of the first and second sets of data (Poehler teaches the accuracy the terrain map would be significantly enhanced when combined

with photogrammetry; this demonstrates the combination of SAR and photogrammetry clearly results in fewer errors within the product, thus the comparison of the two data sets is necessary; Col. 3, lines 63-67).

Poehler does not teach obtaining a first set of data describing an area of terrain, the first set of data having a first type of error, even though Poehler does mention the use of photogrammetry to improve the accuracy. Place teaches a method for producing a map of a surface using satellite imagery, control points, tie points and digital terrain module data (Col. 4, lines 13-15), this is also know as photogrammetry (Col. 1, lines 23-27). Place also teaches the data gathered through the satellite imagery system contains parallax errors (Col. 4, line 17) and non-linear solution errors (Col. 4, line 21). Thus the data set of Place reads on the claimed first data set. Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the radar map system of Poehler with the photogrammetry system of Place in order to produce a map with increased accuracy (Poehler Col. 3, lines 63-67).

As to claim 2, Place teaches wherein the obtaining the first set of data is accomplished using photogrammetry (Place teaches a method for producing a map of a surface using satellite imagery, control points, tie points and digital terrain module data (Col. 4, lines 13-15), this is also know as photogrammetry (Col. 1, lines 23-27)).

As to claim 3, Poehler teaches generating an elevation model of the area using the second set of data (Fig. 2 S6); rendering a synthetic display of the terrain from the

elevation model (displays are sued to record and display terrain elevation and map image data; Col. 7, lines 14-16); and wherein the comparing step includes comparing the synthetic display of the terrain to a photogrammatic output of the first set of data to discover differences therebetween (Poehler teaches the accuracy the terrain map would be significantly enhanced when combined with photogrammetry; this demonstrates the combination of SAR and photogrammetry clearly results in fewer errors within the product, thus the comparison of the two data sets is necessary; Col. 3, lines 63-67).

As to claim 4, Place teaches wherein the first set of data is a photograph of the terrain taken from a known position (Fig. 10 teaches that Alpha is the look angle for the satellite position relative to the point of interest, thus the satellite position is known), and wherein the step of rendering the synthetic display of the terrain includes rendering the synthetic display of the terrain from a point of view of the known position (Fig. 1A shows a celestial body and an orbiting satellite equipped with imaging sensors to create images of the surface of the celestial body).

As to claim 5, Place and Poehler teach wherein the first set of data comprises at least two photographs of the terrain taken at different positions (Place Fig. 4A gives an example of different images taken by the satellite being mapped together), and further comprising: creating a first elevation model from the at least two photographs (Place Fig. 6 shows after the linear solution 72 matches the adjoining images together, the terrain module 73 makes the appropriate elevation effects; Col. 7, lines 19-22, lines 25-

27); orthorectifying one of the at least two photographs using the first elevation model (calculate final orthorectification coefficients; 78 Fig. 6 Place); creating a second elevation model using the second set of data; rendering a display of the second elevation model (Poehler teaches extraction of elevation data to produce a precise elevation map data; Col. 1, lines 15-20); orthorectifying the display of the second elevation model using the second elevation model (Poehler teaches orthogonal plane intersects the path at particular point that defines a center location of the radar when data was collected, this shows that the image is being viewed from above thus making it an ortho-image; Col. 38, lines 20-23); and wherein the comparing step includes comparing the orthorectified photograph with the orthorectified display of the second elevation model (Poehler teaches the accuracy the terrain map would be significantly enhanced when combined with photogrammetry; this demonstrates the combination of SAR and photogrammetry clearly results in fewer errors within the product, thus the comparison of the two data sets is necessary; Col. 3, lines 63-67).

As to claim 6, Place and Poehler teach generating a first elevation model of the area of terrain using the first set of data (Place Fig. 6 shows after the linear solution 72 matches the adjoining images together, the terrain module 73 makes the appropriate elevation effects; Col. 7, lines 19-22, lines 25-27); and generating a second elevation model of the area of terrain using the second set of data (Poehler teaches extraction of elevation data to produce a precise elevation map data; Col. 1, lines 15-20); wherein the comparing step includes comparing a subset of the first elevation model corresponding

to the portion of the area of terrain with a subset of the second elevation model corresponding to the portion of the area of terrain (Poehler teaches the accuracy the terrain map would be significantly enhanced when combined with photogrammetry; this demonstrates the combination of SAR and photogrammetry clearly results in fewer errors within the product, thus the comparison of the two data sets is necessary; Col. 3, lines 63-67).

As to claim 7, Place and Poehler teach generating a first topographical display of the terrain from the first elevation model (calculate final orthorectification coefficients; 78 Fig. 6 Place); and generating a second topographical display of the terrain from the second elevation model (Poehler teaches orthogonal plane intersects the path at particular point that defines a center location of the radar when data was collected, this shows that the image is being viewed from above thus making it an ortho-image; Col. 38, lines 20-23); wherein the comparing step includes comparing positions of lines of constant altitudes on the first and second topographical displays to discover differences therebetween (Poehler teaches the accuracy the terrain map would be significantly enhanced when combined with photogrammetry; this demonstrates the combination of SAR and photogrammetry clearly results in fewer errors within the product, thus the comparison of the two data sets is necessary; Col. 3, lines 63-67).

As to claim 8, Poehler teaches wherein the obtaining the second set of data is accomplished using active remote sensing technology (title teaches the terrain elevation is measured by IFSAR).

As to claim 9, Poehler teaches wherein the active remote sensing technology is one of Interferometric Synthetic ApertureRadar (IFSAR) and Light Detection and Ranging (LIDAR) (title teaches the terrain elevation is measured by IFSAR).

As to claim 10, it is the same as claim 1. The only difference between the two claims is that claim 10 refers to the second set of data in claim 1 as a database. Poehler teaches the SAR mapping system will have access to a previous database of terrain data (Col. 37, lines 64-67; Col. 38 lines 1-4). Therefore, the rejection made for claim 1 will also apply to claim 10. See above for details.

As to claims 11, 12, 13, 14, 15 and 16 they are the same as claims 2, 3, 4, 5, 6 and 7. The only difference between the two claims is that claims 11, 12, 13, 14, 15 and 16 refer to the second set of data in claims 2, 3, 4, 5, 6 and 7as a database. Therefore, the rejections made from claims 11, 12, 13, 14, 15 and 16 still apply to claims 2, 3, 4, 5, 6 and 7. See above for details.

17. The method of claim 10, wherein the identifying step includes: identifying obstacles and terrain features in the data set that are not accurately represented in the

information in the database (Poehler teaches the accuracy the terrain map would be significantly enhanced when combined with photogrammetry; this demonstrates the combination of SAR and photogrammetry clearly results in fewer errors within the product, thus the comparison of the two data sets is necessary; Col. 3, lines 63-67).

As to claim 18, it is the same as claim 10. The only difference between the two claims is claim 18 further discloses the data set is obtained using photogrammetry (Place teaches a method for producing a map of a surface using satellite imagery, control points, tie points and digital terrain module data (Col. 4, lines 13-15), this is also know as photogrammetry (Col. 1, lines 23-27)). Therefore, the rejection made for claim 10 will also apply to claim 18. See above for details.

As to claims 19 and 20, it is the same as claims 15 and 12. See above for details.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takeuchi et al. (US 2002/0114509) teaches a 3D data processing method.

Morici (US 6,233,522) teaches an aircraft position validation using radar and digital terrain elevation database.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claire Wang whose telephone number is 571-270-1051. The examiner can normally be reached on Mid-day flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 571-272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Claire Wang
02/07/2006

JOSEPH MANCUSO
SUPERVISORY PATENT EXAMINER